

WHAT IS CLAIMED IS:

1. A method of operating a computer system for evaluating a programming language statement that includes a first and a second sub-statement, the method comprising the steps of:
 - 5 evaluating the first sub-statement and determining an evaluation success result if the evaluation succeeds or a distinguished value if evaluation fails; said distinguished value being a value not included in the range of possible evaluation success results of the first sub-statement;
 - 10 determining whether the second sub-statement is to be evaluated, and if so, evaluating the second sub-statement and determining an evaluation success result if evaluation succeeds or said distinguished value if evaluation fails; a range of possible evaluation success results of the second sub-statement not including said distinguished value; and
 - 15 determining an evaluation result of the statement depending on at least whether evaluation of the first sub-statement succeeds or fails.
2. The method of claim 1, wherein the second sub-statement is evaluated if evaluation of the first sub-statement did not fail, and the evaluation result of the statement is determined to be the evaluation success result of the second sub-statement if evaluation of the first and the second sub-
20 statements succeeds, and wherein the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statements fails.
3. The method of claim 1, wherein the second sub-statement is evaluated if
25 evaluation of the first sub-statement fails, and wherein the evaluation result of the statement is the evaluation success result of the first sub-statement if evaluation of the first sub-statement succeeds; the evaluation result of the statement is the evaluation success result of the second sub-statement if evaluation of the first sub-statement fails but evaluation of the second sub-
30 statement succeeds; and the evaluation result of the statement is said distinguished value if evaluation of both the first and the second sub-statements fails.

4. The method of claim 1, wherein the second sub-statement is evaluated concurrently with the evaluation of the first sub-statement, and the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statements fails.
- 5 5. The method of claim 1, wherein the second sub-statement is evaluated concurrently with the evaluation of the first sub-statement, and the evaluation result of the statement is said distinguished value only if evaluation of both the first and the second sub-statements fails.
- 10 6. The method of claim 1, wherein the second sub-statement is evaluated independently on whether evaluation of the first sub-statement succeeds, and the evaluation result of the statement is said distinguished value if evaluation of at least one of the first and second sub-statements fails.
- 15 7. The method of claim 1, wherein the second sub-statement is evaluated independently on whether evaluation of the first sub-statement succeeds, and the evaluation result of the statement is said distinguished value if evaluation of both the first and second sub-statements fails.
- 20 8. The method of claim 1, wherein at least one of the first and second sub-statements includes a closure loop statement having an operand indicating that evaluation of the respective sub-statement does not stop before said operand evaluates to said distinguished value.
9. The method of claim 1, wherein at least one of the first or second sub-statements includes a rule statement having a first argument and a second argument, the evaluation of the first argument triggering the evaluation of the second argument.
- 25 10. The method of claim 1, wherein at least one of the first or second sub-statements includes an ordered action system.
11. The method of claim 1, wherein at least one of the first or second sub-statements includes an unordered action system.

12. The method of claim 1, wherein one of the first and second sub-statements is a declarative statement and the other one of the first and second sub-statements is an imperative statement.

13. The method of claim 1, wherein the first and second sub-statements are
5 typed according to a hierarchy of types.

14. The method of claim 13, wherein said hierarchy of types includes at least one minimal type.

15. An article of manufacture for use in a computer system comprising:

a memory;

10 instructions stored in the memory for operating a method for evaluating a programming language statement that includes a first and a second sub-statement, the method comprising the steps of:

evaluating the first sub-statement and determining an evaluation success
15 result if the evaluation succeeds or a distinguished value if evaluation fails; said distinguished value being a value not included in the range of possible evaluation success results of the first sub-statement;

determining whether the second sub-statement is to be evaluated, and if so,
20 evaluating the second sub-statement and determining an evaluation success result if evaluation succeeds or said distinguished value if evaluation fails; a range of possible evaluation success results of the second sub-statement not including said distinguished value; and

determining an evaluation result of the statement depending on at least whether evaluation of the first sub-statement succeeds or fails.

16. A system for evaluating a programming language statement and
25 determining an evaluation result of said statement; comprising:

a memory for storing the statement that includes a first and a second sub-statement,

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a processor for determining the evaluation result of the statement; the evaluation result of the statement depending on whether evaluation of the first and second sub-statements succeeds or fails; the processor being capable of evaluating the first sub-statement and determining an evaluation success result if evaluation succeeds, or a distinguished value if evaluation fails; the processor being capable of evaluating the second sub-statement and determining an evaluation success result if evaluation succeeds, or said distinguished value if evaluation fails; said distinguished value being a value not included in the range of possible evaluation success results.

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